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Anemonoides ×lipsiensis comb. nov. (Ranunculaceae), new for the Italian flora

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Abstract

The hybrid *Anemonoides nemorosa* × *A. ranunculoides* is recorded for the first time in Italy at the southern periphery of Bologna (N Italy, Emilia-Romagna). Its status is supported by both morphological features and chromosome number ($2n = 31$). For this taxon, a new nomenclatural combination is proposed.

Keywords

chromosome number, hybrid, vascular flora

Introduction

Anemonoides nemorosa (L.) Holub is a circumboreal species, quite common in woods and clearings throughout the Alps and peninsular Italy. *Anemonoides ranunculoides* (L.) Holub occurs in Europe and the Caucasus area, and is widespread in the forests of northern Italy, but increasingly rare to the south (Pignatti 2017; Bartolucci et al. 2018).

Natural hybrids among these species have been described since the first half of the nineteenth century for several areas of Austria, Germany, Denmark, and Sweden (Pritzel 1841; Beck von Mannagetta 1890; Camus 1898; Hegi 1912; Bernström 1946).

Since 2012, morphologically intermediate individuals have been known at the southern periphery of Bologna, N Italy (Fig. 1), where *A. nemorosa* and *A. ranunculoides* co-exist. Given that the first species shows typically $2n = 30$ and the second $2n = 32$ chromosomes (Mlinarec et al. 2012), we expect that putatively F1 hybrid plants should show $2n = 31$, as reported by Bernström (1946) for Sweden.

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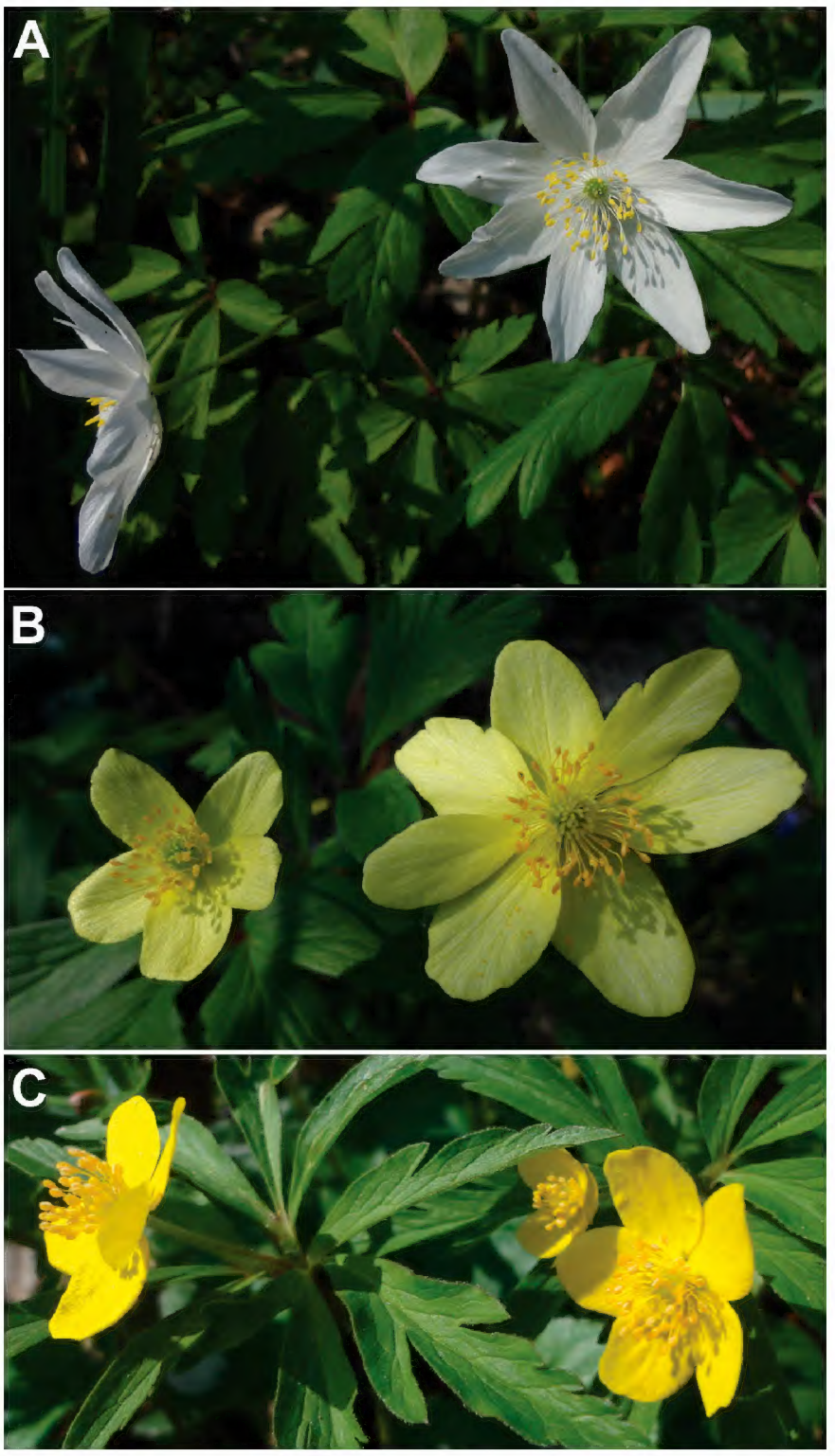

Figure 1. *Anemonoides nemorosa* (L.) Holub (**A**), *A. ranunculoides* (L.) Holub (**C**) and their putative hybrid (**B**) from Via di Roncrio, Bologna, N Italy. March 2017. Photo by L. Peruzzi.

Material and methods

Specimens seen

Italy. *Anemonoides ×lipsiensis* (Beck) Peruzzi & G.Astuti, Bologna, lungo la strada di Roncrio (UTM WGS84: 44.462742N, 11.336363E), margine di bosco, 120 m, 25 March 2017, *G. Astuti, G. Marconi, L. Peruzzi, P. Pupillo* (PI, n. 019279). *Anemonoides nemorosa* (L.) Holub, *ibidem* (PI, n. 019277). *Anemonoides ranunculoides* (L.) Holub, *ibidem* (PI, n. 019278).

Morphological observations

Based on Brennenstuhl (2004), we measured the following characters on three dried individuals for each taxon: number of flowers per shoot, flower colour, flower diameter, number of petals, peduncle length.

Chromosome number

Squash preparations were made on root-tips taken from plants native to the Bologna site and grown in the Botanical Garden of Pisa. Root-tips were pretreated with 0.4% colchicine for 3 hours and then fixed in Carnoy fixative solution for 1 hour. After hydrolysis in HCl 1N at 60 °C, the tips were stained in leuco-basic fuchsine.

Results

Results of morphological observations are reported in Table 1. For all the features evaluated, the putative hybrid shows intermediate values between those of putative parental species.

The putatively hybrid plants show $2n = 31$ chromosomes.

Table 1. Floral morphological features of *Anemonoides nemorosa*, *A.* ×*lipsiensis*, and *A. ranunculoides* in the investigated site.

	A. nemorosa	***A.* ×*lipsiensis***	***A. ranunculoides***
Number of flowers per shoot	1	1–2	2
Flower colour	white	pale yellow	yellow
Flower diameter (cm)	4.0–4.5	3.0–3.5	2.0–2.5
Number of petals	7	5–7	5
Peduncle length (cm)	6.5–8.0	4.5–6.0	3.0–4.0

Discussion

The morphological features of the plants studied agree perfectly with those reported for the hybrid *A. nemorosa* ×*A. ranunculoides* from Saxony-Anhalt, NE Germany, ca. 200 km N-NW to Leipzig (Brennenstuhl 2004). Our chromosome count carried out on the Italian population, $2n = 31$, also agrees with previous counts based on extra-Italian material (Bernström 1946).

The circumscription of tribe Anemoninae has been much controversial in recent years, and a wide array of taxonomic solutions were proposed, ranging from the inclusion of a number of morphologically well-established genera in a large and highly

heterogeneous *Anemone* (Hoot et al. 2012), to the disintegration of the traditional concept of *Anemone* in a number of smaller genera (e.g., Mosyakin 2016; Bartolucci et al. 2018; Christenhusz et al. 2018) to allow the recognition of monophyletic groups. Among the scholars favouring this latter approach, the taxonomic independence of the genus *Anemonoides* Mill. (= *Anemone* sect. *Anemonanthea* DC.) is disputed by some authors preferring a wider concept of *Anemone* (e.g., Ziman et al. 2008; Mosyakin 2016; Pignatti 2017). On the contrary, other authors as Starodubtsev (1991), Banfi et al. (2005), and Bartolucci et al. (2018) recognize it as a distinct genus, an option we also follow here. Under *Anemonoides*, the hybrid *A. nemorosa* × *A. ranunculoides* has been named *A.* ×*seemenii* (E.G.Camus) Holub so far (Holub 1983). However, the name holding priority at (notho-)species level is *Anemone* ×*lipsiensis* Beck, so that the following new combination is needed under that genus:

***Anemonoides* ×*lipsiensis* (Beck) Peruzzi & G.Astuti, comb. nov.**
urn:lsid:ipni.org:names:60478801-2

Anemone ×*lipsiensis* Beck, Fl. Nieder-Österreich 1: 407. 1890 (Basionym)
= *Anemone* ×*vindobonensis* Beck, Fl. Nieder-Österreich 1: 407. 1890
= *Anemone* ×*seemenii* E.G.Camus, J. Bot. (Morot) 12: 101. 1898 ≡ *Anemonoides* ×*seemenii* (E.G.Camus) Holub, Folia Geobot. Phytotax. 18(2): 206. 1983
– *Anemone intermedia* M.Winkl. ex Pritz., Linnaea 15: 652. 1842, nom. nud.

Note. Beck von Mannagetta (1890) lists *A. lipsiensis* and *A. vindobonensis* as "6a" and "6b" respectively, "6" representing the same hybrid formula "*A. nemorosa* ×*ranunculoides*" (Beck von Mannagetta 1890: 406). This guarantees that he considered both these taxa as nothospecies (from the Preface at pag. V: "...sämmtliche Kreutzungen zweier Arten wurden unter einer Nummer vereinigt und die einzelnen Hybriden, insoweit deren Unterscheidung überhaupt möglich ist, unter den gemeinsamen Nummer mit fortlaufenden Buchstaben bezeichnet." ["...all the crosses between two species are united under the same number and the single hybrids, unless they can be differentiated, are indicated by that number followed by consecutive letters"]). Consequently, both names are legitimate (Art. H.4 of ICN, Turland et al. 2018) and of equal priority (Art. 11.5 of ICN), so that we select here *A. lipsiesis* as priority name.

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